Enrolling in the Closest School within Walkable Distance – or Not?

Results of a Simulation of Closest School Enrolment

Sandra Mandic, Debbie Hopkins, Susan Sandretto, Antoni Moore, Judith Rodda, Gordon Wilson

21 July 2016
Average distance to secondary school in Dunedin: 6.2 ± 7.4 km
Example of a “Neighbourhood School”
Example of a School with Wide Catchment Area

33%

48%
Walkable Distances to Dunedin Secondary Schools

- Within walkable distance: 32% (range: 6% to 64%)
- Walking to school rates: 26% (range: 12% to 47%)
Cycleable Distances to Dunedin Secondary Schools

Within cycleable distance: 53% (range: 37% to 79%)

Cycling to school rates: 1.5% (range: 7% to 0%)
Walkable and Cycleable Distance to School

<table>
<thead>
<tr>
<th>Location</th>
<th>ALL</th>
<th>Bay</th>
<th>Tai</th>
<th>Col</th>
<th>Que</th>
<th>Kin</th>
<th>Kai</th>
<th>OB</th>
<th>Joh</th>
<th>StH</th>
<th>Kav</th>
<th>OG</th>
<th>Log</th>
</tr>
</thead>
<tbody>
<tr>
<td>Distance</td>
<td></td>
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<tr>
<td></td>
<td>32%</td>
<td>64%</td>
<td>48%</td>
<td>40%</td>
<td>37%</td>
<td>33%</td>
<td>29%</td>
<td>24%</td>
<td>22%</td>
<td>19%</td>
<td>18%</td>
<td>17%</td>
<td>6%</td>
</tr>
<tr>
<td></td>
<td>53%</td>
<td>79%</td>
<td>64%</td>
<td>62%</td>
<td>57%</td>
<td>57%</td>
<td>53%</td>
<td>48%</td>
<td>43%</td>
<td>41%</td>
<td>40%</td>
<td>39%</td>
<td>37%</td>
</tr>
</tbody>
</table>
Dunedin Secondary Schools’ Enrolment

School enrolment

Closest school

- Walkable & closest: 28.5%
- Non-walkable & closest: 14.4%

Distant school

- Walkable but distant: 24.2%
- Non-walkable but distant: 32.9%

n=1,095 (8 schools)

Closest school = closest non-integrated school
Only students from non-integrated schools included
Distance to Enrolled and Closest* School

<table>
<thead>
<tr>
<th>School enrolment</th>
<th>Closest school</th>
<th>Distant school</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Enrolled: 1.2 ± 0.5 km</td>
<td>Enrolled: 4.1 ± 3.3 km</td>
</tr>
<tr>
<td></td>
<td>Closest: 1.2 ± 0.5 km</td>
<td>Closest: 1.5 ± 0.5 km</td>
</tr>
<tr>
<td>Walkable</td>
<td>9.4 ± 11.9 km</td>
<td>9.9 ± 7.5 km</td>
</tr>
<tr>
<td></td>
<td>Closest: 9.4 ± 11.9 km</td>
<td>Closest: 7.0 ± 6.4 km</td>
</tr>
<tr>
<td>Non-walkable</td>
<td>9.4 ± 11.9 km</td>
<td>9.4 ± 11.9 km</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*n=1,095

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Transport to School

School enrolment

<table>
<thead>
<tr>
<th>Distance to the closest school</th>
<th>Non-walkable</th>
<th>Walkable</th>
</tr>
</thead>
<tbody>
<tr>
<td>Closest school</td>
<td>7.0%</td>
<td>65.3%</td>
</tr>
<tr>
<td>Distant school</td>
<td>3.3%</td>
<td>22.6%</td>
</tr>
</tbody>
</table>

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Only students from non-integrated schools included

Mandic et al. (2016)
BEATS Study Symposium 2016 (Abstract)
Factors Associated with School Choice

School enrolment

<table>
<thead>
<tr>
<th>Distance to the closest school</th>
<th>Walkable</th>
<th>Non-walkable</th>
</tr>
</thead>
<tbody>
<tr>
<td>Closest school</td>
<td>76.0% Closest</td>
<td>69.9% Preferred co-ed</td>
</tr>
<tr>
<td></td>
<td>64.4% Preferred co-ed</td>
<td>63.2% Closest</td>
</tr>
<tr>
<td></td>
<td>59.0% Friends</td>
<td>56.3% Friends</td>
</tr>
<tr>
<td>Distant school</td>
<td>78.0% Preferred co-ed</td>
<td>69.0% Preferred co-ed</td>
</tr>
<tr>
<td></td>
<td>60.0% Facilities</td>
<td>56.7% Friends</td>
</tr>
<tr>
<td>Positive Feedback</td>
<td>(55.1% parents; 52.1% students)</td>
<td>(50.6% parents; 54.4% students)</td>
</tr>
<tr>
<td></td>
<td>54.3% Sports</td>
<td>53.1% Facilities</td>
</tr>
<tr>
<td></td>
<td></td>
<td>51.7% Sports</td>
</tr>
</tbody>
</table>

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n=1,095
Who Decided?

School enrolment

<table>
<thead>
<tr>
<th>Distance to the closest school</th>
<th>Walkable</th>
<th>Non-walkable</th>
</tr>
</thead>
<tbody>
<tr>
<td>Closest school</td>
<td></td>
<td></td>
</tr>
<tr>
<td>31.4% Student</td>
<td>22.4% Parent</td>
<td>45.8% Student+Parent</td>
</tr>
<tr>
<td>Distant school</td>
<td></td>
<td></td>
</tr>
<tr>
<td>44.5% Student</td>
<td>11.3% Parent</td>
<td>44.2% Student+Parent</td>
</tr>
</tbody>
</table>

38.0% Student
21.5% Parent
39.2% Student+Parent

38.9% Student
13.6% Parent
45.6% Student+Parent

*p<0.001

n=1,095

Closest school = closest non-integrated school
Only students from non-integrated schools included
Sibling(s) Enrolment in the Same School

<table>
<thead>
<tr>
<th>Distance to the closest school</th>
<th>Closest school</th>
<th>Distant school</th>
</tr>
</thead>
<tbody>
<tr>
<td>Walkable</td>
<td>41.1%</td>
<td>24.5%</td>
</tr>
<tr>
<td>Non-walkable</td>
<td>49.3%</td>
<td>26.0%</td>
</tr>
</tbody>
</table>

*Only students with sibling(s) (n=1026)

Closest school = closest non-integrated school
Only students from non-integrated schools included

*p<0.001
When you enrolled, was this the secondary school closest to your home?

- ALL: 45.3%
- 12: 92.5%
- 1: 80.3%
- 4: 77.7%
- 10: 49.8%
- 7: 47.8%
- 2: 35.0%
- 8: 33.3%
- 6: 29.7%
- 9: 22.0%
- 5: 20.2%
- 3: 19.3%
- 11: 5.8%

n=1,465
Boarders excluded
Examining Correlates of the Chosen Outcome (Regression Analysis)

**Univariate analysis**

- Variable A (e.g. age)
- Variable F
- Variable C
- Variable D
- Variable E

Significant univariate correlates are entered in a multivariate analysis

**Multivariate analysis**

- Variable A (e.g. age)
- Variable F
- Variable C
- Variable D
- Variable E

Significant multivariate correlates create a final model
Correlates of the Initial Enrolment in the Closest School: Univariate Analysis

Individual characteristics
- Age
- Gender
- Ethnicity
- Socioeconomic status

School factors
- Co-educational status
- Integrated vs. non-integrated
- School decile
- School size

Family factors
- Sibling(s) enrolled in the same school
- Number of vehicles at home

School choice decision
- Who chose the school

Reasons for school choice
- Positive/negative comments from students/parents
- Social connections (friends, sibling(s), parents)
- Co-educational status
- Location (closest school to home)
- Programmes (sports and cultural) and facilities
Correlates of the Initial Enrolment in the Closest School: Univariate Analysis

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- Programmes (sports and cultural) and facilities

Initial enrolment in the closet school

Who chose the school
Multivariate correlates of the initial enrolment in the closest school

- **Sibling(s) attending the same school**: 1.50 (1.02-2.21) - 1.5 times more likely
- **Enrolled in co-educational school**: 2.65 (1.03-6.80) - 2.6 times more likely
- **Chose school because school was closest to home**: 3.61 (3.09-4.21) - 3.6 times more likely
- **Negative comments from students at closest school**: 0.66 (0.46-0.95) - 1.5 times less likely
- **Two or more vehicles at home**: 0.33 (0.11-0.98) - 3 times less likely

**n=1,465** (non-boarders)
Dunedin Secondary Schools' Enrolment

Closest school = closest non-integrated school

Only students from non-integrated schools included

n=1,095 (8 schools)
Walkable and Cycleable Distance to School

Current

- ≤2.25 km: 34.9%
- 2.25 km ≤ 4.0 km: 56.3%
- Beyond 4.0 km: 43.7%

Simulated

- ≤2.25 km: 51.2%
- 2.25 km ≤ 4.0 km: 28.0%
- Beyond 4.0 km: 72.0%

*Closest school = closest non-integrated school
Only students from non-integrated schools included

n=1,093 (boarders excluded)
Simulation of Closest School Enrolment in Dunedin

<table>
<thead>
<tr>
<th>Implications?</th>
<th>Transport to School</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Current</td>
</tr>
<tr>
<td><strong>Distance to</strong></td>
<td>5.9 km (SD 7.4 km)</td>
</tr>
<tr>
<td>school</td>
<td>26.2%</td>
</tr>
<tr>
<td></td>
<td>39.2%</td>
</tr>
</tbody>
</table>

n=1,093 (8 schools)
Conclusions

• Adolescents were more likely to enrol initially in the closest school if:
  – their sibling(s) attended the same school
  – they enrolled in a co-educational school
  – they chose the school because of proximity to home
  – had less than two vehicles at home and
  – did not hear negative comments from students at closest school.

• Policies that encourage enrolment in the closest school could lead to increased rates of active transport, reduced rates of driving to school and therefore may contribute to addressing obesity epidemic, traffic congestion and sustainability concerns.
BEATS Research Team
BEATS Advisory Group
Schools, students, parents
Teachers, school principals
Research support staff
Thank you!

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